

May 29, 2009

Project: Cedar Chemical Company Project Number 013636

Mr. Ryan Benefield, P.E. Arkansas Department of Environmental Quality (ADEQ) 5301 Northshore Drive North Little Rock, Arkansas 72218

Subject: Response to Comments on the Facility Investigation (FI) Report for Former

Cedar Chemical Company Facility (April 22, 2009) EPA ID Number ARD990660649, AFIN 54-00068

Dear Ryan:

On behalf of Exxon Mobil Chemical Company and Helena Chemical Company, AMEC Geomatrix, Inc., (AMEC) is pleased to provide the Arkansas Department of Environmental Quality (ADEQ) with our response to the above-referenced letter. For clarity, the ADEQ comments are reproduced in *italics*, and our response follows immediately after each comment. A final revised copy of the changed sheets will be submitted once the ADEQ has reviewed, commented and/or approved this response, and all remaining issues have been resolved.

#### **RESPONSE TO COMMENTS**

ADEQ Item # 1 – Historical Data Comparison for the Perched Zone – it is stated that "Section 4 of the FIR indicates historical data comparisons were made on the alluvial aquifer presented in Table 11. Were any historical data comparisons made on the perched aquifer?

Response to Item # 1:

As discussed in Section 4.2.3 of the FI report, historical data comparisons were made for compounds that have historically been detected in the Alluvial Aquifer. Historical data comparisons were not made for compounds in the Perched Zone. Because of the limited body of historical data available for Perched Zone wells, AMEC did not believe that the comparison would be as meaningful as the Alluvial Aquifer comparison performed in the FI. In order to respond to the agency's query on this issue, however, we have identified the following Perched Zone wells where sufficient historical data were present to allow such a comparison. These wells are

- 1MW-3 located at the active surface water impoundments;
- 2MW-1 and 2MW-2 located near the former surface impoundments;
- EMW-1 and EMW-4 located in the main parking lot; and
- EMW-6B located in the southeast corner of the facility.

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The historical comparison was performed for the COCs 1,2-dichloroethane (1,2-DCA), 1,2-dichlorobenzene (1,2-DCB), dinoseb, propanil, acetone, chloroform and benzene. Trend versus time plots are provided in Attachment 1 of this response. As shown on the trend plots, since 1993, maximum concentrations of these constituents have declined in all of these Perched Zone wells; many that were present at concentrations above 1000 ug/l have now declined to non-detect.

Although the body of data available for the Perched Zone is not sufficient to support a rigorous analysis, the trends observed in these wells are consistent with the declining trends discussed in the FI for the Alluvial Aquifer. The most likely explanation is the termination of on-going releases. In general, these trends indicate contaminant levels and contaminant mass in the Perched Zone and Alluvial Aquifer have declined significantly since operations concluded at the Facility in 2002.

ADEQ Item #2 – Where is the historical data listed in Table 11 referenced from?

## Response to Item # 2:

The data on Table 11 was taken from the Current Conditions Report dated November 2007 and from the FI report dated February 2009. Data presented in the Current Conditions Report was taken from the following sources:

- Phase I Facility Investigation Report Cedar Chemical Corporation 1993, EnSafe
- Phase II Facility Investigation Report Cedar Chemical Corporation 1995, EnSafe
- Phase III Facility Investigation Report Cedar Chemical Corporation 1996, EnSafe.

The Table has been revised to include a reference and is included in Attachment 2.

ADEQ Item #3 – Appendix F wells number 1 and 2 appear to be improperly located on the well location map. Well number 2 appears to be on Cedar property and well number 1 is located north of the Norac property.

### Response to Item #3:

The original domestic well review was performed by Banks Information Solutions (Banks) of Austin, Texas. Bank's report placed the known wells according to the latitude and longitude provided in the State of Arkansas Reports on Water Well Construction and Pump Installation (State Water Well Reports) and these locations were presented on Figure 5 of the FI Report. To address the ADEQ comment, a field reconnaissance of the well locations was performed and the coordinates for all of the wells were rechecked. This reconnaissance confirmed the ADEQ's observation that the locations based on the State Water Well Reports are incorrect. Based on the new coordinate information Well Number 1 is actually located on the Syrgis property. Well Number 2 is located northwest of the Cedar Chemical Facility on a property owned by a Mr. Mauldin and referred to on East Arkansas Title Maps as property 625-794.



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The well on this property is documented as owned by Allen Hargraves. The location of Well Number 6 was corrected, moving from the southeast corner of the Blackhawk property to the northwest corner of that property. As documented in the FI Report, all of the well owners were previously contacted during the FI work, with the exception of Mr. Stephens (well number 10), who was notified of groundwater conditions on his property as a part of earlier investigations.

Figure 5 has been revised and is included in this response.

ADEQ Item #4 – Figure 2 – Suspected Source Areas does not include the former surface water ponds and the current waste water treatment ponds that were mentioned in the report.

Response to Item # 4:

Figure 2 has been revised to include these areas, and is provided in this response.

ADEQ Item #5 – Page 20, 3<sup>rd</sup> paragraph states that 4-chloroaniline was detected within the drum vault at concentrations ranging from 4.0 to 11.0 mg/kg. Table 6 indicates 4-chloroaniline was detected from 5.0 to 11.0 mg/kg. Please correct either the narrative or Table 6.

Response to Item #5:

The table is correct. The text has been revised to state the correct information and the corrected text is included in Attachment 3 of this response.

A revised FI Report addressing these comments will be submitted to ADEQ within 10 days following ADEQ's final approval of these comments.

Sincerely yours, AMEC Geomatrix, Inc.

Kelly Beck, P.G. Sr. Project Manager

Kelly Bak

Enclosure: Revised FI Information

CC: Dave Roberson (DeMaximis, Inc. 2203 TImberloch Place, Suite 2132, The Woodlands, TX 77380 Ed Brister (Helena Chemical Co., 225 Schilling Blvd., Suite 300, Collierville, TN 38017)

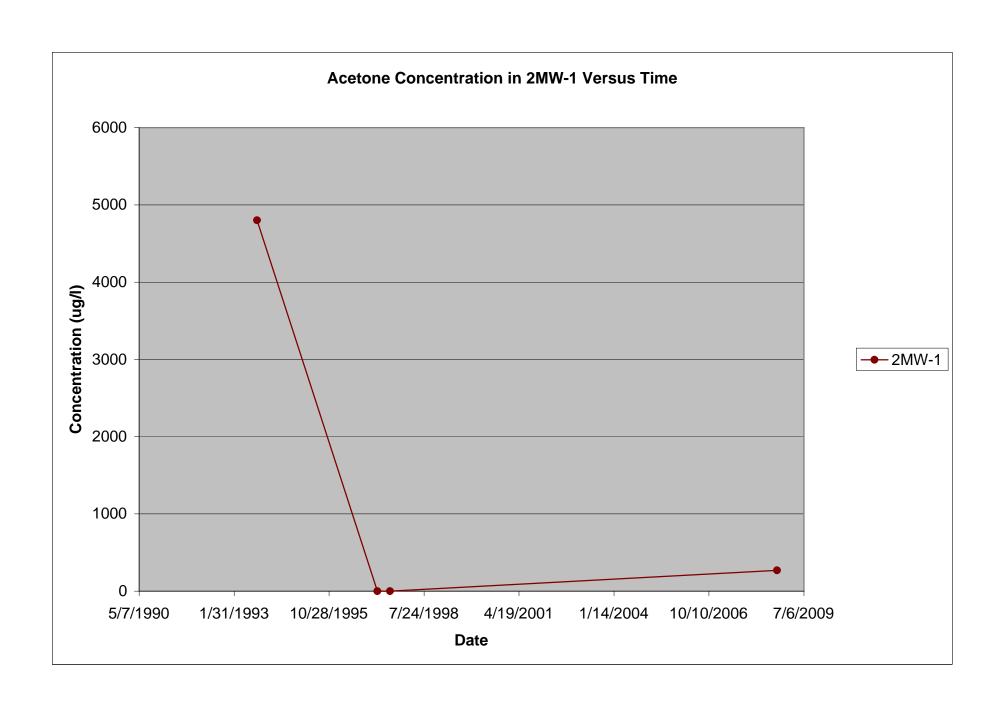
Steve Walker (Terra Environmental Services, Inc., 5215 W. Laurel Street, Suite 110, Tampa FL. 33607)

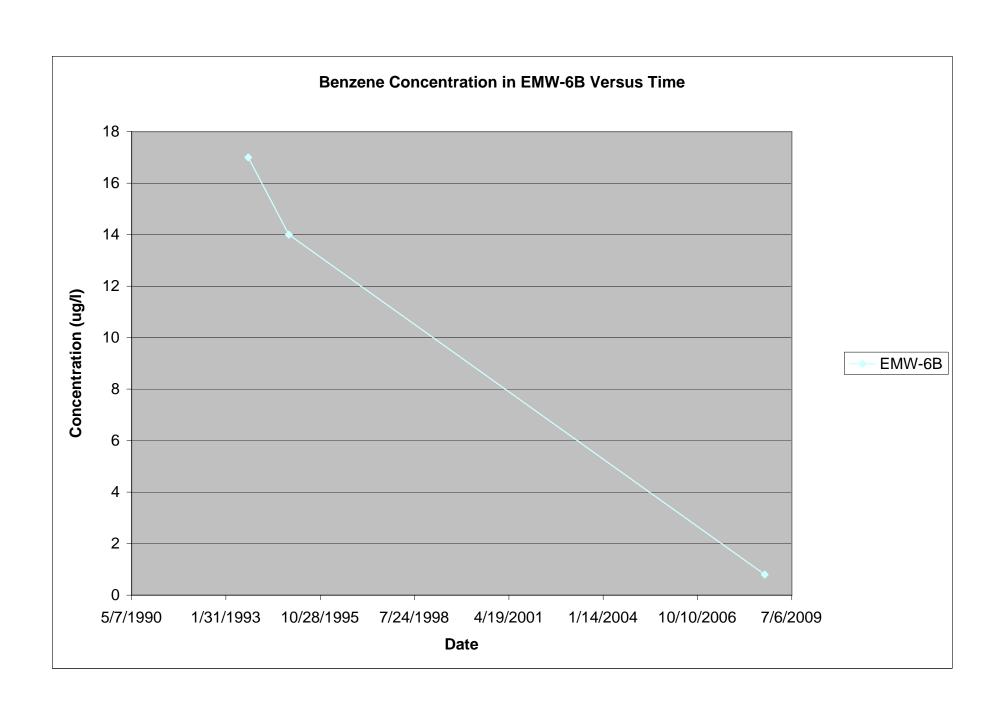
Dave Backus (EnSafe., 5724 Summer Trees Drive, Memphis TN 38134)

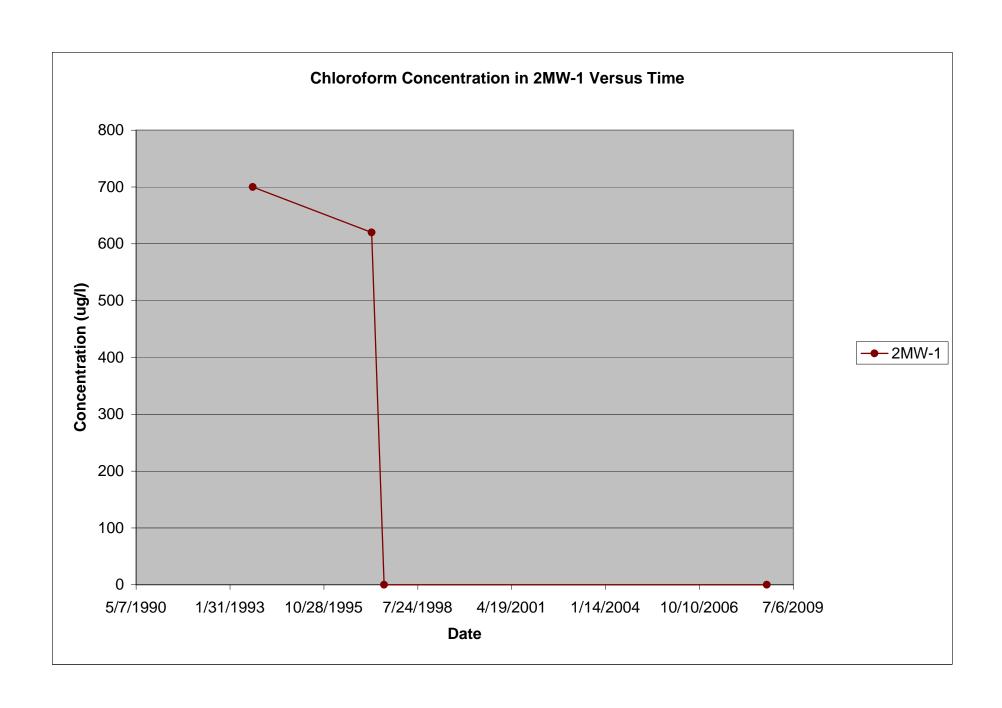
Allan Gates (Mitchell Williams Selig Gates & Woodyard, PLLC, 425 West Capitol Ave, Suite 1800, Little Rock, Arkansas.72201-3525)

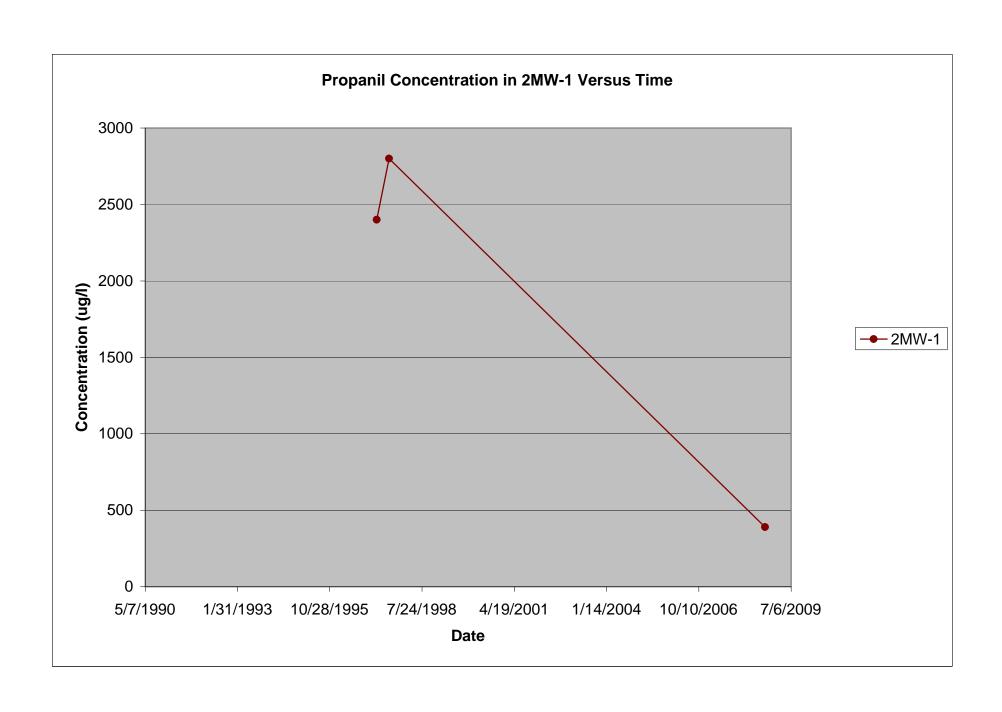


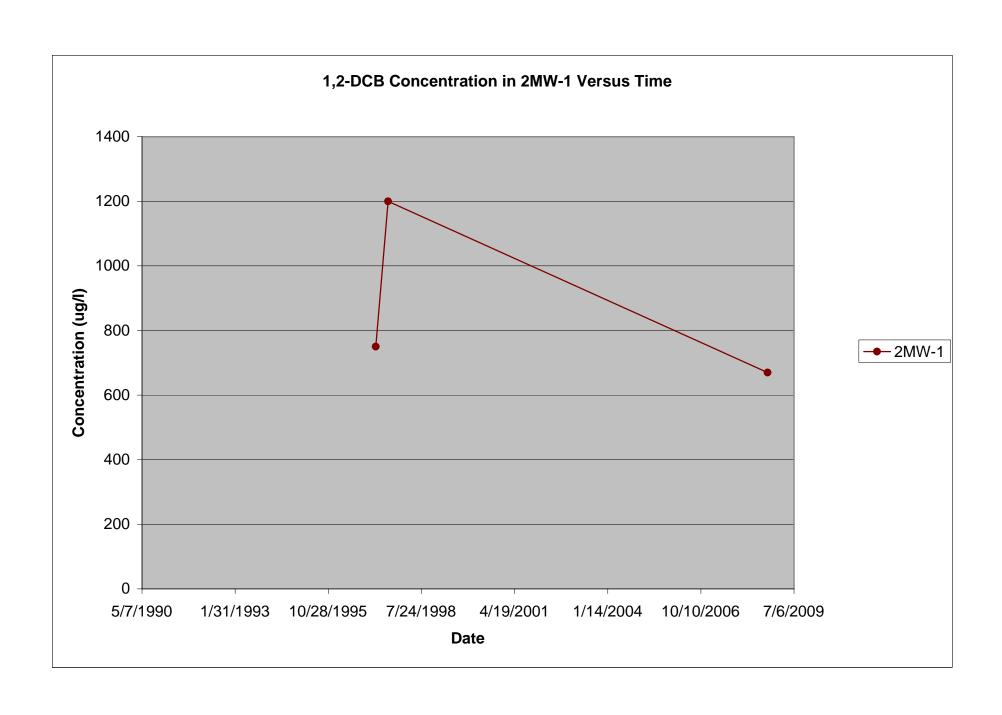
**Trend Plots** 

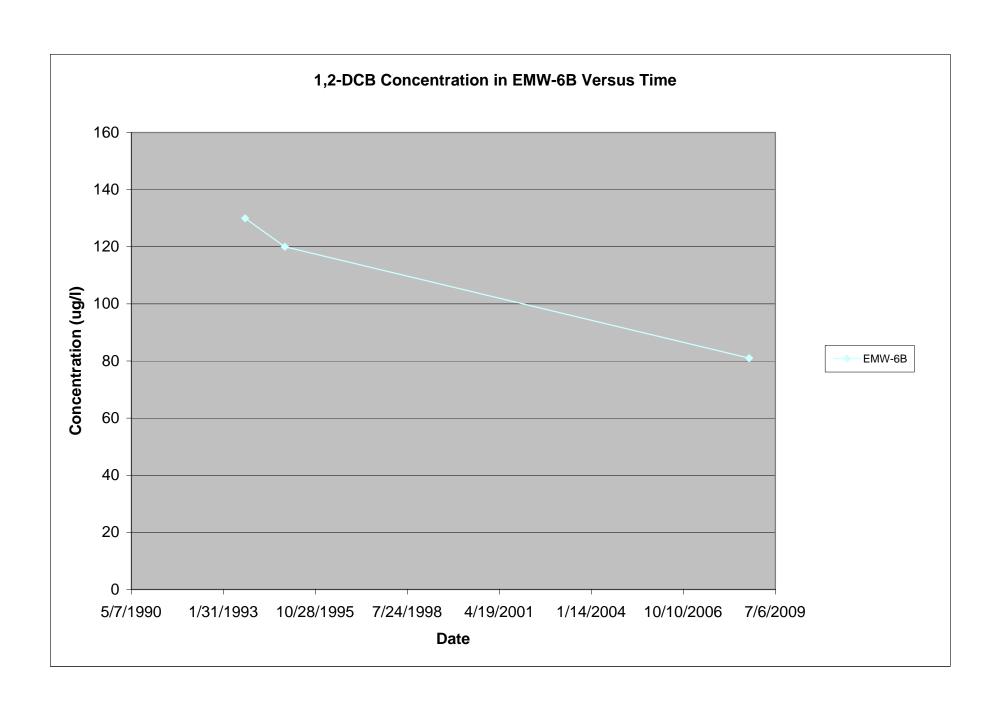


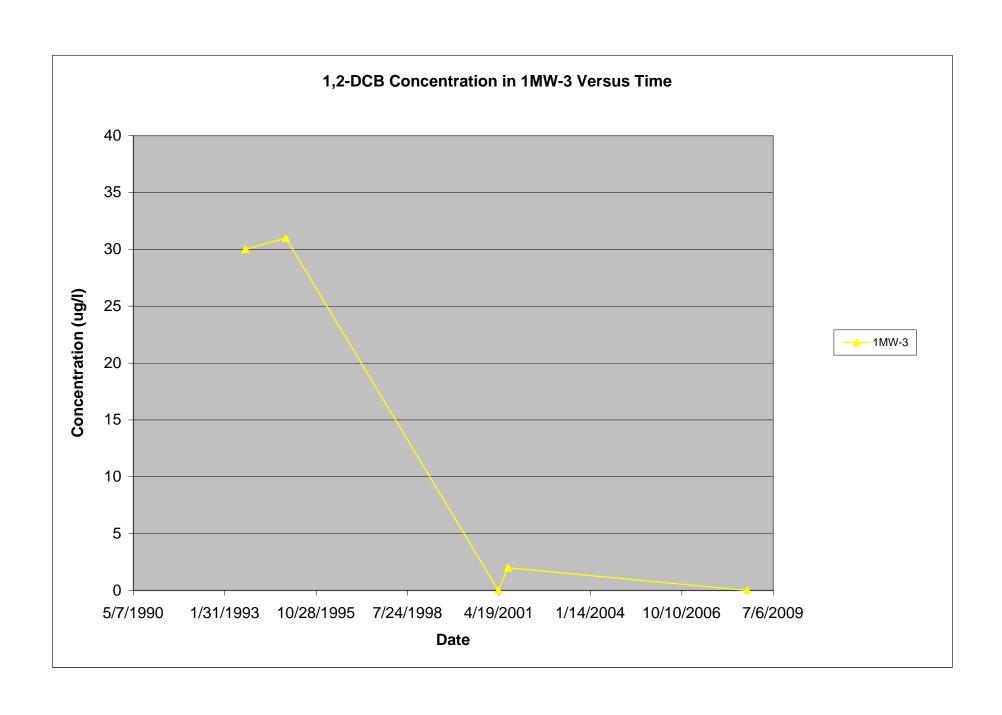


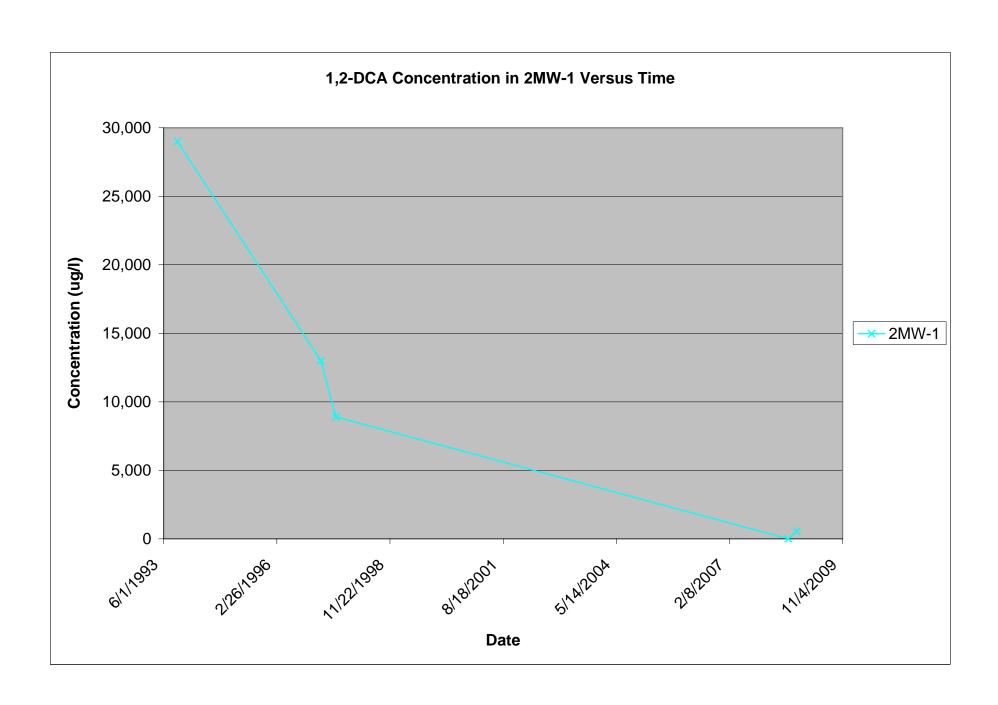


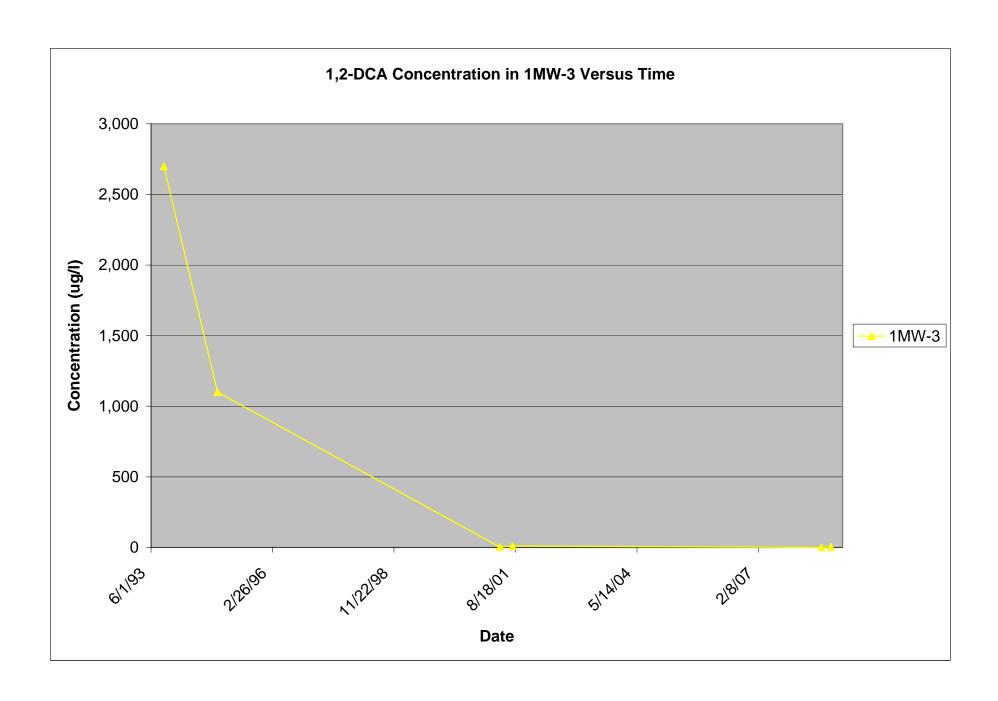


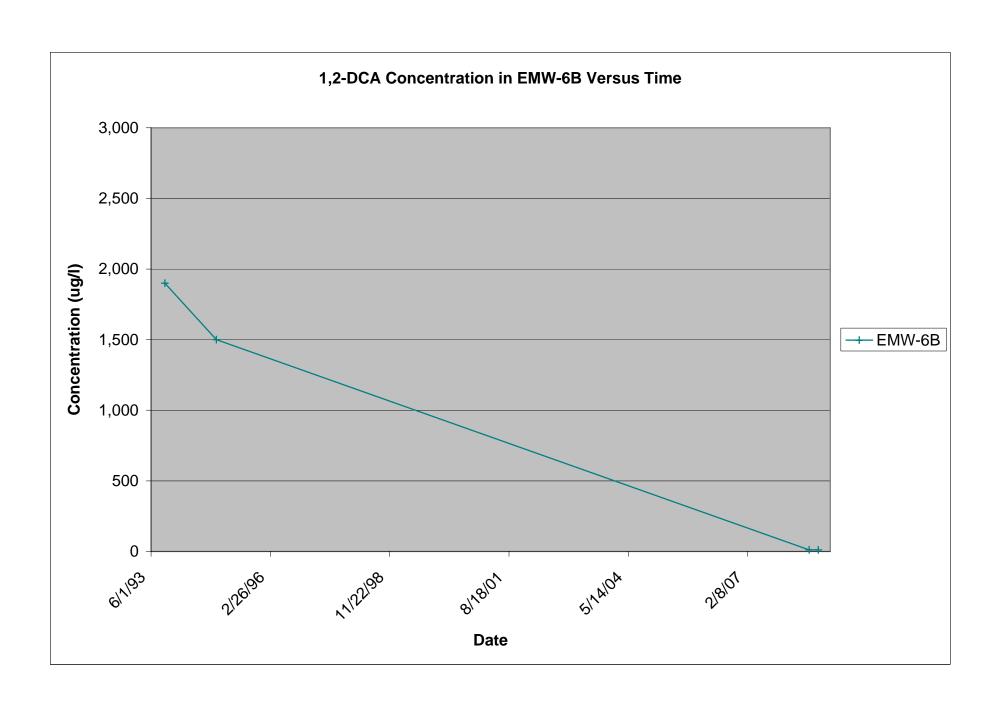


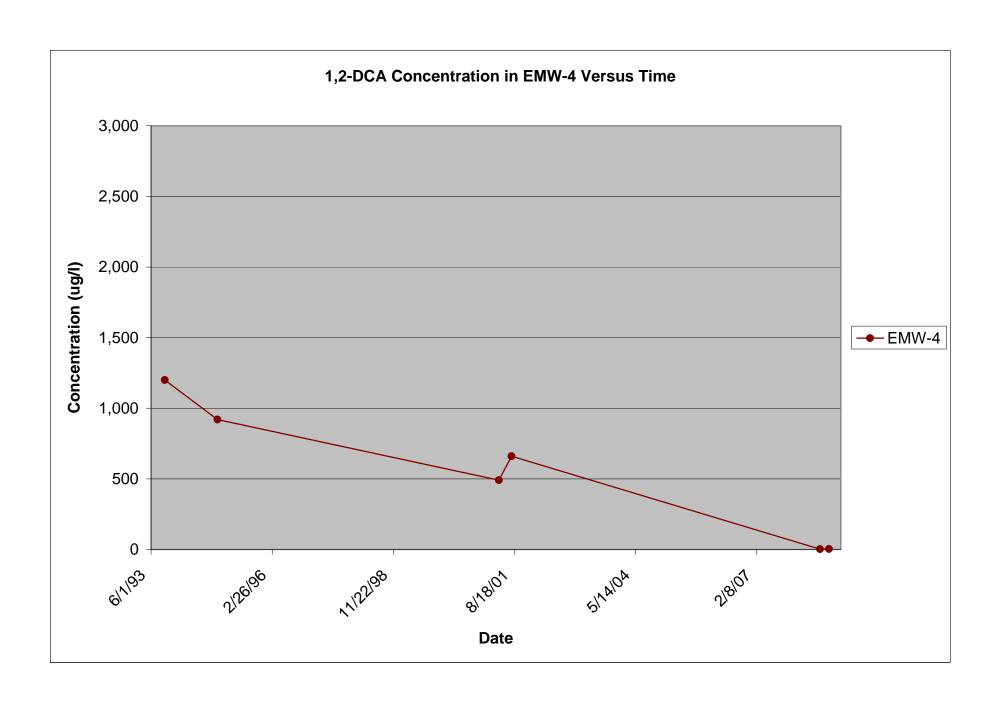


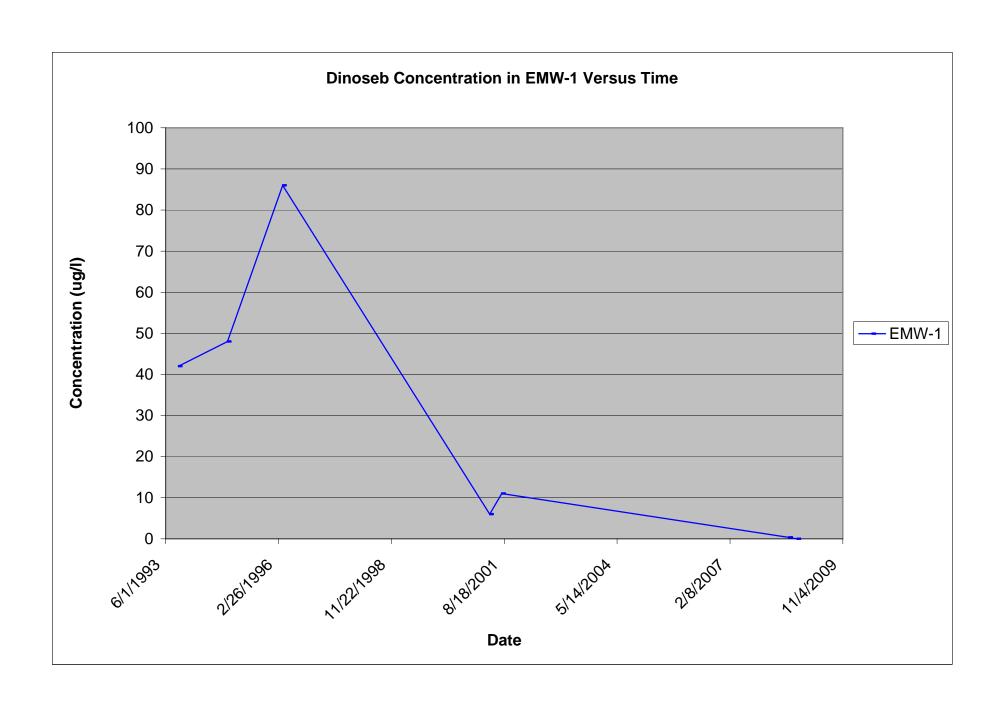


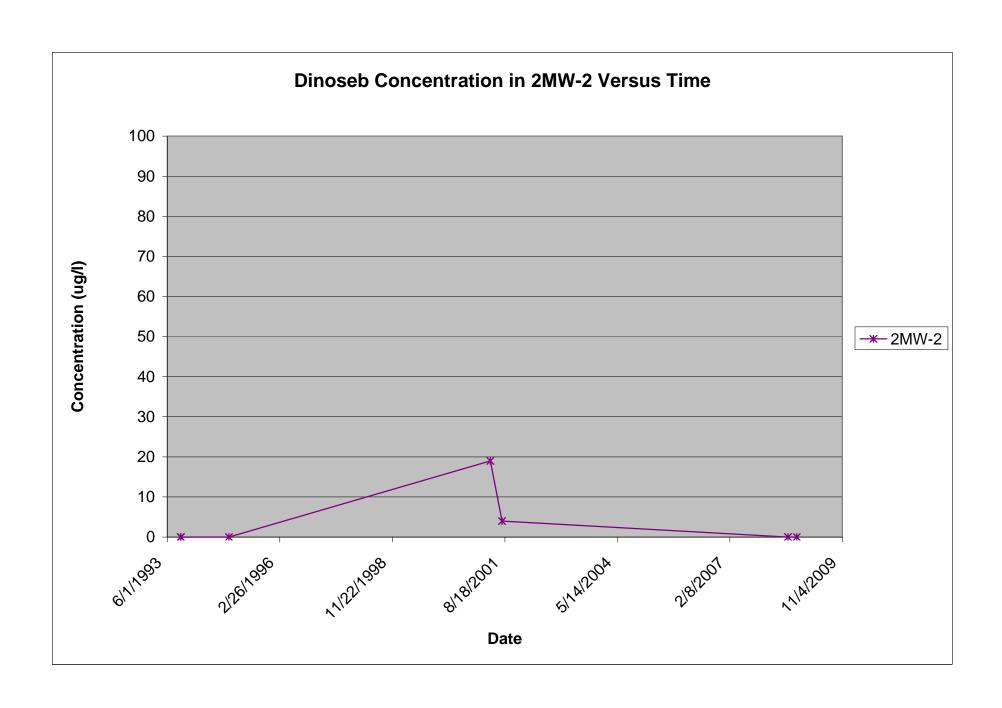












# **Attachment 2**

Table 11

#### Table 11

#### **Historical Comparison of Detections in Groundwater Alluvial Aquifer**

### Cedar Chemical Corporation Helena-West Helena, Arkansas

CCR <sup>1</sup>		
Analyte	Maximum observed concentration (ug/l)	
Pesticides/Polychlorinated Bipheny		
4,4'-DDT	0.074	
4,4'-DDD		
Alpha BLC	0.07	
Alpha-BHC alpha-Chlordane	0.07	
Aroclor-1016	0.07	
beta-BHC		
Dieldrin	0.03	
Dinoseb Endrin	980	
gamma-BHC (Lindane)	0.2	
Heptachlor	0.2	
Heptachlor epoxide	0.40	
Methoxychlor Semivolatile Organic Compounds	0.13	
1,2-Dichlorobenzene	6800	
1,2-Dichloropropane	0.018	
1,3-Dichlorobenzene	310	
1,4-Dichlorobenzene	11	
2,4-Dichlorophenol 2,6-Dinitrotoluene	57 13	
2-Chloronaphthalene	13	
2-Chlorophenol	110	
2-Butanone (MEK)		
2-Methylphenol (o-Cresol) 2-Hexanone	1200	
4-Chloroaniline	8700	
4-Methylphenol (p-Cresol)	660	
4-Methyl-2-Pentanone (MIBK)	2500	
4-Nitrophenol	250	
Benzoic acid Benzyl alcohol	1400 110	
bis(2-Chloroethyl)ether	180	
bis(2-Ethylhexyl)phthalate (BEHP)	31	
Carbon disulfide		
Diethylphthalate Dimethylphthalate	6.3	
Di-n-butylphthalate	6.3	
Fluoranthene	980	
Isophorone	350	
Naphthalene Nitrobenzene	6 4	
N-Nitroso-di-n-propylamine	740	
Phenol	3200	
Propanil	700	
Volatile Organic Compounds 1,1,2-Trichloroethene		
1,1,2-Trichloroethane	27	
1,2,4-Trichlorobenzene		
1,1-Dichloroethane	1.4	
1,2-Dichloroethane	92000	
1,2-Dichloropropane 3,4-Dichloroaniline	43	
Acetone	2000	
Aniline		
Benzene	810	
Bromodichloromethane Bromoform	6.1 11	
Chlorobenzene	470	
Chloroethane	170	
Chloroform	340	
Chloromethane	55	
Ethylbenzene Methylene chloride	2000	
o-Xylene	2000	
Toluene	760000	
trans-1,2-Dichloroethene	32	
Trichloroethene Vinyl acetate	10 10	
Vinyl accide Vinyl chloride	40	

	Maximum
Analyte	observed concentratio
Pesticides/Polychlorinated Bipher	(ug/l)
4,4'-DDT	
4,4'-DDD	0.041 J
Aldrin	0.053 J
alpha-BHC alpha-Chlordane	0.01
Aroclor-1016	0.0098
beta-BHC	0.046 J
Dieldrin	
Dinoseb	27
Endrin	0.0081
gamma-BHC (Lindane)	0.059 J
Heptachlor Heptachlor epoxide	0.076 J 0.098 J
Methoxychlor	0.018
Semivolatile Organic Compounds	
1,2-Dichlorobenzene	1100
1,2-Dichloropropane	2.1
1,3-Dichlorobenzene	90
1,4-Dichlorobenzene 2,4-Dichlorophenol	0.96 J 39
2,4-Dicnioropnenoi <del>2,6-Dinitrotoluene</del>	39
2-Chloronaphthalene	13
2-Chlorophenol	3.6 J
2-Butanone (MEK)	3.7 J
2-Methylphenol (o-Cresol)	41
2-Hexanone	13
4-Chloroaniline	2100 J 3.5 J
3-Methylphenol & 4-Methylphenol 4-Methyl-2-pentanone (MIBK)	3.5 J 1.2
4-Nitrophenol	1.2
Benzoic acid	
Benzyl alcohol	
bis(2-Chloroethyl) ether	41
bis(2-Ethylhexyl)phthalate (BEHP)	300
Carbon disulfide	1.1
Diethylphthalate	
Dimethylphthalate Di-n-butyl phthalate	1.8 J
Fluoranthene	1.00
Isophorone	1.3 J
Naphthalene	
Nitrobenzene	
N-Nitroso di n propylamine	
Preparil	5.4 J 49
Propanil Volatile Organic Compounds	49
1,1,2-Trichloroethene	0.53 J
1,1,2-Trichloroethane	2.000
1,2,4-Trichlorobenzene	5.7 J
1,1-Dichloroethene	1.3
1,2-Dichloroethane	19000
1,2-Dichloropropane	47000
3,4-Dichloroaniline	17000
Acetone Aniline	18
Benzene	21
Bromodichloromethane	
Bromoform	
Chlorobenzene	310
Chloroethane	11
Chloroform	0.43
Chloromethane	1.7 J
Ethylbenzene Methylene chloride	2.4 0.8 J
Methylene chloride o-Xylene	0.8 J
Toluene	0.49 0.71 J
trans-1,2-Dichloroethene	
Trichloroethene	
Vinyl acetate	
Vinyl chloride	10

Page 1

analyte: Detected in CCR but not in FI
analyte: Detected in FI but not in CCR
compound that has decreased in maximum concentration in the FI

CCR Data is from the Current Conditions Report, dated November 2007.

<sup>&</sup>lt;sup>2</sup>FI Data is from the Facility Investigation Report, dated February 2009.



#### Volatile and Semi-Volatile Organic Constituents

The VOCs and SVOCs observed in soils include scattered low detections of acetone and methylene chloride. These compounds have historically been observed in trip and field blanks. This observation, and experience at other sites would suggest that at least some of the detections of these compounds in soil are likely artifacts of sampling and/or analytical procedures. Despite this, concentrations in certain soil samples and in Perched Zone groundwater are too high to be explained as laboratory or sampling artifacts, and both these compounds were believed to have been utilized at the Facility. Acetone and methylene chloride are therefore included as COCs for the Facility.

#### Organochlorine Pesticides in Soils

Organochlorine pesticides, (aldrin, alpha-BHC, beta-BHC, chlordane, dieldrin, endrin, gamma-BHC [lindane], methoxychlor) were detected in surface and subsurface soils throughout the facility at locations in the Process Areas, in backfill from samples collected within the Drum Vault, and in a few background samples above a regulatory standard.

Backfill samples collected from two locations within the Drum Vault contained only one pesticide, 4-chloroaniline. The concentration of this COC ranged from 5.0 to 11 mg/kg. The water sample collected from Test Hole #1 in the Drum Vault contained several pesticides and herbicides. These included 4-chloroaniline (47000 ug/l), dinoseb (350 ug/l), and propanil (2800 ug/l). Soil and water analytical results from the Drum Vault are presented in Tables 6 and 7.

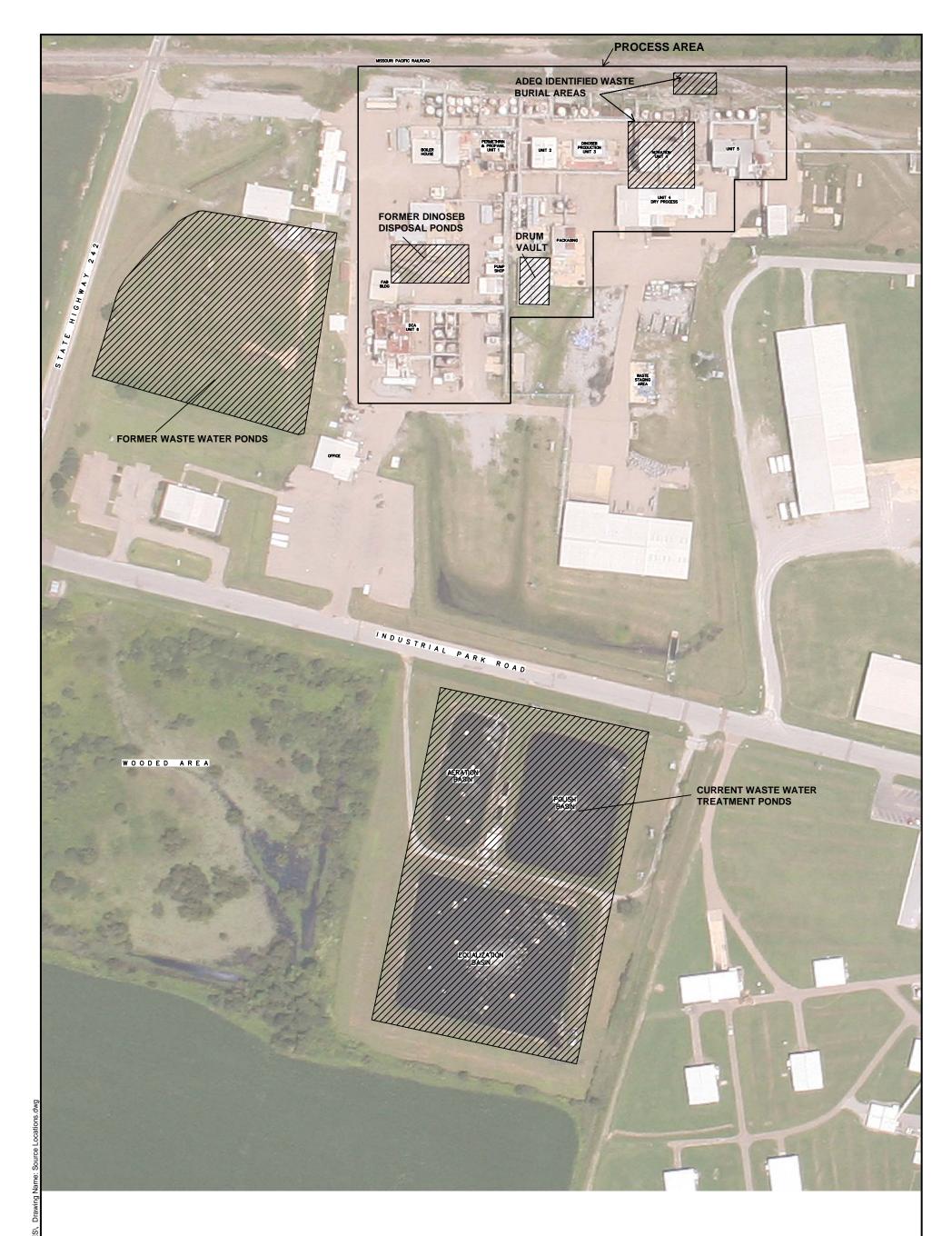
#### **Metals in Soils**

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Soils were analyzed for a range of metals at most of the DPT locations. These were compared to values observed in background sampling locations. In general, metal concentrations observed in on-site soils were consistent with the ranges observed in off-site soils that are not believed to be affected by historical Facility operations.

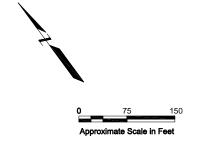
One exception would be the detections of arsenic observed in soils from DPT-3, DPT-10 (near former Process Unit 3) and DPT-30, near the Facility Maintenance Building. The observed arsenic concentrations (ranging from 32.3 to 128 mg/kg) although relatively low, are well above observed background concentrations. This suggests there may have been minor localized releases of an arsenic source material in these areas. It is also possible, however, that these may be a relict of routine pesticide application around building exteriors at the Facility.





# **EXPLANATION**

**Suspected Sources Area** 



Suspected Source Areas

Cedar Chemical Helena - West Helena, Arkansas

y: MLS	Date: 1/5/09	Project No. 13	<u> 636</u>
AMEC G	eomatrix	Figure	2

